

# LANASET DYES FOR SILK AND WOOL

There are thirteen colors of Lanaset Dye. The range is unlike any other: these are special shades, deep and richly resonant; sophisticated, “European” tones.

There are several assist chemicals to perfect dye performance (penetration, leveling, exhaust). If combined with precise timing, careful monitoring of acidity and temperature, and exact measurements of weight and volume—these assists allow you to match and repeat shades exactly, and to achieve even, fast, bright results.

But the dyes have a forgiving nature. And you can get beautiful colors with very simple procedures. Put the work into a moderately acid dyebath—raise the temperature slowly to a simmer—hold at 200° F for a while—and let the bath cool down slowly (30-45 minutes for each stage: warming, simmering, cooling). Rinse, and let dry. There is only one trick with the Lanaset: take-up stops if dyebath pH goes above 5.5. But the fix is simple: add a couple tablespoons of vinegar.

We don’t discourage the use of pH test-paper, stock solutions, Sodium Acetate, or precise weighing and metering of ingredients. Quite the reverse: we sell these supplies and tools and know they’re sometimes essential. But we’d like to demystify the Lanaset. They’re EASY TO USE. If you are a production dyer and must repeat exact shades, follow our technical recipe and be as precise as you need to be. But if you’re dyeing a single piece, or just want to play with colors, use the first recipe.



## COMPLETE LANASET COLOR LIST

1	YELLOW	4G	(mixing primary)
2	GOLD	2R	(somewhat harder to dissolve)
3	ORANGE	R	
4	SCARLET	2B	
5	RED	G	(mixing primary)
6	BORDEAUX	B	(also called “magenta”)
7	VIOLET	B	(the stunner—an imperial color)
8	BLUE	2R	(mixing primary)
9	TURQUOISE	5G	
10	NAVY	R	(the deep tones of navy, teal, brown
11	TEAL GREEN	B	are extremely rich
12	BROWN	B	and pleasing)
13	BLACK	B	(not weak: but you’ll need more dye for a really intense black)

# LANASET RECIPE #1 (Basic)

To dye one pound of fiber (yarn or cloth) to a medium shade:

3 gallons of WATER  
1 cup of GLAUBERS SALTS  
2 teaspoons of DYE  
2 cups of VINEGAR

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Use more DYE for darker shades, and less for lighter shades. More of everything for more FIBER, less of everything for less FIBER.

Paste the DYE: dissolve in a tablespoon of hot WATER in a small container. Add a cup of hot WATER and stir.

In a 4 gallon heatable non-reactive container (enamelled or stainless steel), pour in 3 gallons of cool WATER. Add the GLAUBERS SALTS, stir until dissolved. Add VINEGAR and stir. Add the DYE and stir.

Pre-soak your FIBER, so it's wet through. Add FIBER to dyebath. Slowly raise dyebath temperature to a simmer, 200°. For silk don't go over 190° F. Spend 30-45 minutes bringing the temperature up. Hold at top temperature for 30-45 minutes. Stir occasionally while it's cooking, briefly and gently. Be sure to stir from top to bottom as well as from side to side, so that the top, middle and bottom layers of fiber change places. This will prevent heat from being trapped on the bottom of the pot and causing uneven take-up.

Remove dyepot from heat, let cool gradually, again for 30-45 minutes. Wash material in warm soapy WATER, rinse in clear lukewarm WATER. Air dry.

Be sure the pot is big enough to hold your work without crowding. Tie skeins in 3 or 4 places with loose loops (tightly tied). Don't shock work with sudden temperature changes, unless you intend to felt.

If take-up slows, remove the fiber, stir in 2 tablespoons more VINEGAR and re-enter fiber; if this doesn't work, repeat. If your WATER is alkaline, you'll always need more VINEGAR. If your WATER is acid, you may need less (but if the acidity comes from chlorine treatment, it will cook off and need replenishing).

The final bath should be very near clear. 95-98% exhaust is possible with Lanaset—the recipe above typically gets 90% or better.

As a small planetary kindness, neutralize your dyebath before discarding: add two cups of regular household Ammonia (3-5% solution) or a half cup of Washing Soda.

# TECHNICAL NOTES

SODIUM ACETATE is used as a pH BUFFER. The Lanaset take best at a pH of 4.5; they'll work up to 5.0; but they pretty much stop at 5.5. Even if you establish a pH of 4.5 at the beginning, by the end of your dyeing pH may drift up towards neutral. If it rises as high as 5.0, adding Sodium Acetate the next time will probably hold it in range. If your pH stays below 5.0 you don't need the Sodium Acetate (although it won't do any harm).

ACETIC ACID is the acid of choice for the Lanaset. It's good with wool and silk, it's relatively cheap, and is less hazardous than the alternatives. Chemical supply houses have Acetic Acid at concentrations of 100% (called glacial), 80%, 56% (most common), 28%, or 14%. Regular grocery store DISTILLED WHITE VINEGAR is the same chemical at a 5% concentration. Whenever a dye recipe calls for 56% Acetic Acid, you can substitute Vinegar: use 11 times as much as the recipe calls for, and reduce the Water by an appropriate amount.

56% Acetic Acid is a harsh chemical. It's expensive to ship, and therefore costly in small quantities. If you use ten gallons of Vinegar in a month, consider using 56% Acetic Acid. But Vinegar is safer, easier to get, and cheaper in small quantities. In our recipe for a pound of Fiber, it's the difference between using two tablespoons of a dangerous substance and two cups of an almost harmless one.

STOCK SOLUTIONS are concentrated dye liquors, prepared in advance of dyeing. They are handy in classrooms; one person can prepare the dye for everybody. And handy if you dye every day, because you can do a week's weighing in one shot. But use of stock solutions can mean that you dissolve more dye than you need, which you have to store, or discard. It is not a more *accurate* method—just *consistent*—only as good as your initial weighing. In fact precise metering of liquids can be harder than precise weighing of powders (a good syringe, incidentally, is better than a pipette). We cover both methods: dye powder and stock solution. Use whichever is better for you.

Ciba-Giegy (the maker of Lanaset Dyes) believes that the leveling agent Albegeal SET is not suitable for home/studio use. Glaubers Salts have always been an adequate substitute.

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## LANASET RECIPE #2 (Technical)

To dye 500 gm of fiber (1.1 LB)

	PROPORTIONS	AMOUNT	(ENGLISH)
WATER (water/fiber ratio)	25:1	12.5 liter	(3.5 gallon)
DYE (for pale to very deep shades)	.1 to 4% WOF	.5 to 20 gm	(.1 to 4 teaspoon)
GLAUBERS SALTS (leveler)	20% WOF	100 gm	(3.5 ounce)
VINEGAR (5% acetic acid)	40 gm/liter	500 ml	(2.25 cup)
SODIUM ACETATE (pH Buffer)	1 to 2 gm/liter	12.5 to 25 gm	(.5 to 1 ounce)

Note 1: The quantities on the right are an analog to Recipe #1 (with its pound of Fiber)—the ratios and percentages on the left are the key here.

Note 2: Water/Fiber ratio is also called the "liquor ratio"—it can vary from 5:1 up to 50:1, depending on the work being dyed—25:1 is a reasonable middle for wool.

Note 3: The Dye, and Glaubers Salts are expressed as a percentage of the "weight of fiber" (WOF).

Note 4: The Acid and pH Buffer are meant to bring the dyebath to a pH of 4.5; they have nothing to do with the WOF and are expressed in grams/liter of dyebath Water—much will depend on starting pH.

# LANASET RECIPE #2 (Technical) — *continued*

## MEASURING OUT DYE

### METHOD ONE—STOCK SOLUTION

To make 1% stock solutions (which make later arithmetic easier), weigh out the amount of dye you want (depending on how many pounds of fiber you want to dye to what depth of shade). Do this for each color you need (the amounts need not be the same). The object now is to dissolve each pile in exactly 100 times its weight of water. Multiply the weight of each pile, in grams, by 100 to get the weight of water you need—which is also the volume of water in cubic centimeters or in milliliters (thanks to the metric system)

Paste the dye with hot (boiling) water, a known amount, in a small cup or beaker. Thin with 2-3 times the first volume of water to get a liquid, pour into a larger container (be sure no powder is left behind, pour back and forth if necessary) then add the rest of the water (warm is okay), stir thoroughly. Your stock solutions are ready. Each cc of solution holds .01 gram of dye. If you want half a gram of dye, you just dispense 50 cc of stock solution. 1% solutions are fairly standard, but you can make a 1.5% or 3% or 5% if you wish to: 20 times the weight of water, for instance, gives a 5% solution.

*The stock solution method makes color mixing easier, especially if you expect to want to get the same mix another time. It also is very handy for dyeing graduated shades of a color—just use graduated amounts of your stock solution, keeping everything else the same.*

## MEASURING OUT DYE

### METHOD TWO—DYE POWDER

The dry method is simpler, because you don't need to fuss with water weights, but you must keep the dye powders from getting loose. Keeping each color or mix in a separate weigh boat can help a lot. Pre-measuring the exact contents of each dyepot you intend to do is even easier to keep up with. When the time comes, you take each little pile of powder, paste and dissolve it (as above), and pour it in. In fact you can convert all your powders to pasted and dissolved liquids at this stage if you want to. Which gives you the mechanical advantages of stock solutions without the making and metering. The half cup or so of water per 3 gallon dyebath will not affect your liquor ratio perceptibly.

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## PREPARE DYEBATH

Take a suitable dyepot (enamelled or stainless steel) of a suitable size (3-4 gallons in our example above) and fill it with the amount of Water you need (25 times the weight of Fiber to be dyed). Lukewarm Water is best. If you want to be fussy, deduct now the small amounts of Water that will enter as Dye stock solution, as the extra liquid in Vinegar: maybe 2-3 cups total. Sodium Acetate and Glaubers Salts dissolve easily—simply add the appropriate weight of powder and stir. Also stir in Vinegar. Stir until everything is evenly in solution. Check the pH with some narrow range acid test paper. If the pH is still not low enough, add Vinegar 2 tablespoons at a time until it is at 4.5. If the pH is too low (if you have extremely acid water), add non-sudsing ammonia 1 tablespoon at a time until it's right (and cut the amount of Vinegar you add to future dyebaths appropriately). The ideal temperature at this stage is 120° F—if you are way below, warm it up a little.

## ENTER GOODS

Put the material you are dyeing into the dyebath and leave to soak for ten minutes, stirring occasionally.

## ENTER DYE

Remove the work and add the dye from your stock solution or batch mix. Re-enter the fiber and stir gently. Leave to soak for ten minutes stirring occasionally. The dye will circulate through the fiber, but there is no take-up at this temperature. Still about 120° F.

# LANASET RECIPE #2 (Technical) — *continued*

## START COOKING

Check your thermometer, you want the temperature to climb gradually from 120° F to a simmer (200° F) over 30-45 minutes. Reduce the heat if it's going too fast, increase if it's going too slowly. Stir occasionally, but very gently. If you are especially concerned about level results, hold the temperature at 170° F for about 10-15 minutes. There is take-up at this temperature, but it is still slow. Bring the temperature slowly the rest of the way to a simmer, just under a boil. (You can boil wool if you are very gentle.) Let it simmer for 30-45 minutes, or until exhaust (water is clear, all the color is in the work). With silk, do not let the temperature go over 190° F: make that your top temperature, held for 30-45 minutes. Stir infrequently, very gently. Be sure to stir from top to bottom as well as from side to side, so that the top, middle and bottom layers of fiber change places. This will prevent heat from being trapped on the bottom of the pot and causing uneven take-up. Turn off the heat, and let the pot cool gradually to room temperature.

## FINISH

Remove the work from the dyepot and wash in warm soapy water. Very little color should come out. Rinse in clear water. Let the work air-dry (you can spin out some of the excess water in a washing machine).

## CLEANING

Check the final pH of the dyebath. It should be 5.0 or below. If not, you will either have to add more acid in the beginning, or part way through. Before discarding the dyebath, sweeten it up with any mild alkali so it's close to neutral. Household ammonia, washing soda, baking soda, an amount roughly equivalent to the amount of vinegar you started with.

## STORING

If you have stock solutions, find containers and a place for them that is away from light, heat, air. Sealed jars in a refrigerator is best, if you have the room. Remember, when you come to use them again to make sure they're still fully dissolved. Similarly stow all dye powders and assist chemicals: tightly shut opaque airtight containers (refrigeration is not necessary). Clean up any spilled liquids or powders, washing with soap and water is enough for all chemicals used here.

## NOTES

3-4% is a deep shade for all colors but Black. A really deep Black may take 6%. The Gold settles out more than the others, stir or shake or swirl. Silk dyebaths should not go over 190° F, otherwise treat the same as wool in the above recipes. A fortunate quality of the Lanaset is that all colors are roughly the same intensity, which simplifies mixing. You can probably mix the Lanaset with another Acid Wool Dye that works in the same temperature and pH ranges: test to be sure.

Use normal dyeing precautions. Watch out for heat, for powders (don't get on skin, in mouth or nose or eyes), for solutions (keep off skin, don't ingest, don't splatter); for fumes (don't breathe in, keep from skin, eyes). Be careful, clean up as you go, clean thoroughly at the end. Respirator masks, rubber gloves, goggles, aprons: use what seems appropriate to you. The dyes are nontoxic, the assist chemicals are supposed to be; you're using a little more vinegar than you would for salad dressing, a lot less than for making pickles. But don't expose irreplaceable parts unnecessarily, your own or others'. Ventilation, cleanable surfaces, old clothes, no cooking utensils. PAY ATTENTION.