

**Immersion Dying on using WashFast Acid Dyes –
Using 1% Dye Stock Solutions**

Depth of Shade (DOS) refers to the ratio of dye powder to dry fiber weight. For 100 grams of dry fiber, 1 gram of dye powder equals 1% of the dry fiber weight. 1% DOS for 100 grams of fiber = 1 gram of dye powder.

Stock Solutions make it much easier to measure out dye by pre-mixing the dye powder with a precise amount of H₂O. Our class's Stock Solutions are made at 1% DOS (depth of shade): 1 grams of dye powder per 100 mL of water. Therefore, for 100 grams of fiber (dry weight) uses 100 mL of 1% stock solution for a 1% DOS.

Depth of Shade (DOS) for Wool and Silk

Light pastel shade = .5% DOS (for 100g of dry fiber use .5g dye powder or 50 mL stock solution)

Medium shade = 1% DOS (for 100g of dry fiber use 1g dye powder or 100 mL stock solution)

Deep shade = 2% DOS (for 100g of dry fiber use 2g dye powder or 200 mL of stock solution)

Very Dark or Black = 3-4% DOS (for 100g of dry fiber use up to 3-4g dye powder or 300-400 mL of 2% stock solution)

Note: Double the DOS above for dying Nylon.

Equations

Desired DOS _____ / DOS % of Stock Solution 1 = factor _____

example: Desired DOS 1.5% / DOS % of Stock Solution 1% = factor 1.5

DYE 1:f Ratio _____ g Fiber x factor _____ = _____ mL stock solution

H₂O 1:40 Ratio _____ g Fiber x 40 = _____ mL H₂O (1000mL=1 Liter)

Salt 1:1/2 Ratio _____ g Fiber x .5 = _____ g Salt

Fixer 1:1/6 Ratio _____ g Fiber x .15 = _____ g Citric Acid

The Procedure

Step 1: Weigh your dry fiber to be dyed. Weight of Fiber: _____ grams

Step 2: Wet out your fiber by measuring ½ tsp (2.5ml) Synthrapol in roughly 2 ½ gallons (10 liters) of hot water per 500 gm of fabric. Soak for at least 30 minutes.

Step 3: Measure your stock solution dye amounts.

Color A _____ amount _____ mL

Color B _____ amount _____ mL

Color C _____ amount _____ mL

Color D _____ amount _____ mL

Total amount of dye _____ mL

Step 4: Make the dye bath in a stainless steel pot.

Add water: _____ liters

Add salt: _____ grams

Add Synthrapol (1 tsp)

Add dye

Add the Fixer (Citric Acid): _____ grams

Step 5: Add the Fiber. Squeeze out the excess water from your fiber and then add it to the dye pot.

Step 6: Raise the temperature to 205 F (96 C). (180 F for silk)

Step 7: Keep at temperature and stir frequently for the next 30-60 minutes. The darker the color, the longer the dying time. The dye should exhaust, meaning the water becomes clear. (If it doesn't after 60 min, use less dye next time)

Step 8: Cool down. Allow the dye bath to cool to room temperature for at least 30 minutes or overnight (preferred). More dye will fix while cooling.

Step 9: Wash out fiber. Remove fiber and rinse it well in warm water. Wash with ½ tsp of Synthrapol per 500 gm of fabric. Rinse until water runs clear.