ACID dyes are a large class of chemical dyes applied mainly to wool, silk, other animal fibers, and nylon (although nylon is a synthetic, chemically it is similar to animal fibers). They are named “acid” because they are made from organic acids and need acid in the dyebath in order to react with the fiber. These dyes react readily, are easy to control, and give clear, vivid colors with good fastness characteristics. When stored in a cool, dark place, the dry powdered dye will keep up to 4 years. Acid dyes are most often used for high temperature immersion dyeing, but can also be applied with surface design techniques on silk and wool. They are ideal for handpainting and rainbow dye or multicolor dye techniques. Acid dyes are reversible and cannot be used for over-dyeing or double-dyeing.
**Fiber Types**
Ciba Washfast Acid Dyes may be used on the following fiber types:
- Wool (including Cashmere, Alpaca, Angora, and other protein fibers)
- Silk
- Nylon

**Techniques**
- high temperature immersion
- handpainting silkscreening
- block printing
- airbrushing
- warp painting
- resist (paste resist, gutta, bound)
- batch dyeing (tie dyeing, rainbow dyeing)

See reverse for further details.

**Color Available**
Yellow, Gold Yellow, Scarlet, Fuchsia, Turquoise, Navy, Brown, Black, Green, Blue, and Violet.

*Note: These dyes are completely intermixable.*

**What You Will Need**
Stainless steel, enamel, plastic or glass measuring and mixing cups and spoons. Do not use galvanized metal or aluminum for mixing or storage.

MASK and GLOVES
GLAUBER'S SALT – a leveling agent which works to produce even dyeing (table salt may be used, although leveling may be slightly reduced).

ACETIC ACID (56% strength), OR VINEGAR, OR CITRIC ACID MAY BE USED – causes the dye to react with the fiber. See DYE PROCEDURE.

WATER – must be soft water. If your water is hard, use Calgon (Sodium Hexametaphosphate) to soften it prior to dyeing.

CIBA WASHFAST ACID DYES

**INSTRUCTIONS**

**Safety In Use**
Although no chemical is entirely free from hazard, these products will present a low to no health risk, provided that good standards of studio hygiene are observed in their use and storage. All persons handling them should take precautions to avoid accidental ingestion, inhalation, skin and eye contact and should be aware of any limitations of use of specific products. While dyes and the chemicals associated with their use are not highly toxic, they are industrial chemicals and should be handled with care. Chemical products should not be allowed to get into the eyes, but if they should by accident, wash eyes with clean water and then obtain medical treatment. Prolonged or repeated contact with skin should be avoided.戴 rubber gloves and use implements to stir solutions and dyebaths. Inhalation of dusts should be avoided by careful handling of powders. If the dyes are handled where particles may become airborne, a suitable dust respirator should be worn.

Obviously, chemicals should not be taken internally, and the use of food, drink and smoking materials should be prohibited where chemicals are employed. The utensils used for dyeing should not be used for other purposes (eg. food). A final suggestion: Children and animals are naturally curious. Do not leave open jars or bottles where little hands and paws can get to them.

Safety data sheets on individual products are available upon request.

**Preparing The Fabric**
Before dyeing any fabric, it must be scoured. This removes dirt, grease, starches, sizing, and other impurities from the fiber which interferes with the dyeing process. Fabric may be scoured with Synthrapol Soap or Orvis Paste.

**Recipe For Dyebath Method**
Because acid dyes will store in liquid form for up to 6 months, it is easier to work with them in stock solution when immersion dyeing.
Preparing A Stock Solution

To make 1-liter stock solution

- 250 ml. soft water
- 10 g. washfast acid dye powder
- 1 drop nonionic detergent (Synthrapol)

Place water in stainless steel, enamel, or glass pan. Add dye. Add detergent. Heat until dye is dissolved - usually 5-10 minutes at a boil. Pour this solution into a 1 liter container. Add enough cool water to bring solution up to 1 liter. Transfer solution to a stock container for storing. Store out of heat or direct light. This solution may be used in all dye recipes. Colors may be intermixed.

Dye Procedure

To dye 500 g. of fiber to a 1% depth of shade:

- 500 ml. washfast acid stock solution
- 100 g. salt
- 25 ml. 56% acetic acid (you may substitute with 250 ml. of vinegar or 25g of citric acid)
- 4 liters or more of soft water

1. Weigh and record dry weight of fiber.
2. Scour and wet out fiber.
3. Place 4 liters of water into a stainless steel, enamel, or glass dye pot.
4. Add half salt, add half acetic acid (or vinegar, or citric acid), add all the stock solution.
5. Add fiber; begin heating
6. After 20 minutes, add remaining salt.
7. After another 20 minutes, add remaining acid.
8. Continue heating and stirring according to the requirements of the type of fiber.
9. Remove from heat; cool to almost room temperature before removing fiber.
10. Rinse thoroughly in tepid water; wash with 30 ml. Orvus Paste to 500 g. of fiber; rinse well; extract excess water; dry.

Fiber Requirements

WOOL is usually dyed at 1% for a full shade except for blacks, navy blues, and maroons, which usually require up to 3%. It may be boiled but should not be allowed to go to a rolling boil. Temperature changes must be gradual to avoid felting. It should be processed at least 1 hour to 1 1/2 hours for good fastness.

SILK is also dyed at 1% but will have richer concentration at this shade than wool. It must be dyed at a lower temperature than wool; not higher than 185 F. (85 C.)

NYLON is dyed at a 2% depth of shade for 1 hour or more and is brought to a full boil. It does not absorb the dyes readily as wool or silk because of its molecular structure.

NOTES:
1. If a shade is not satisfactory during the beginning of the bath, it is best to let the bath continue before attempting to adjust it with additions of dye. However, dye may be added later in the bath. On the other hand, if a color early in the bath is exactly what is required and has appeared earlier than planned it is possible to "freeze" the color. Prepare a second bath which is identical to the dye bath except lacking dye. Transfer the fiber to this bath, with all the salt, acid, and heating as if it had continued in the original dye bath. This is called a "stop bath" because it is designed to stop the dye color at a certain point. DO NOT simply pull the yarn out without finishing the dye run, unless fastness is not a consideration.
2. Rinsing well is vital. Unreacted dye remains trapped in the fiber and often uneven and running color is due not to a poor dye job but to inadequate rinsing.

Dye Recipe For Direct Application

NOTE: this recipe is good for handpainting, silkscreening, block printing, airbrushing, warp painting, and batch dyeing.

- 50 ml. dye stock solution of each color needed
- 100 ml. soft water
- 100 ml. denatured alcohol

1. Mix the water and alcohol together and use this to dilute the dye stock solution for paler colors.
2. Dye may be directly applied in many ways: eg. stretch fabric and handpaint, tie, stitch or fold fabric and apply dye with brushes or pipettes. Paint dye directly onto warp yarn. Thicken dye with sodium alginate and silkscreen or block print, etc.
Handpainting, Silkscreening, Block Printing, Airbrushing

1. Dye may be mixed according to the recipe on the previous page and painted directly onto the fabric.

2. It may be used for resist techniques and the dye may be thickened with Sodium Alginate. To 1 liter (4 cups) of water, add 10 to 30 g. (2-6 tsp.) Sodium Alginate (depending on desired effect).

3. Setting the dye requires steam fixing to render them colorfast.

4. A canning kettle with a rack makes an excellent steamer, or a larger one may be made from a metal garbage can (see our Steaming Data Sheet). After the fabric is completely dry, roll it in a piece of newsprint to form a tube. Roll the tube so it becomes a doughnut, tie the roll securely but not tightly. (Yarn may be wrapped in Saran Wrap insuring no two areas are touching.) Place the canning rack in the kettle and fill with a mixture of 1/3 vinegar to 2/3 water to 3/4" below the rack. Bring water to a simmer. Cut six pieces of newsprint in circles 1" smaller in diameter than the kettle; place three of them on the rack. Add the fabric bundle. Add three more pieces of newsprint. Insure that none of the newsprint touches the walls of the kettle; it is essential condensation does not drip onto the paper, then the fabric. Cover the kettle with a towel. Allow fabric to steam for 15 to 20 minutes. Remove bundle and unwrap immediately.

5. After steaming, rinse fabric repeatedly in warm water until rinse water runs clear. Next, wash with 30 ml. of Orvus Paste to 500 g. of fabric and warm water. Rinse.

Batch Dyeing, Tie Dyeing, Bound Resist, Warp Painting

1. The dye recipe on the previous page may be used for these techniques, however, prior to applying the dye, presoak the fabric in a mixture of: 125 ml. salt, 500 ml. vinegar, 2 liters soft warm water for each 500 g. of fiber. Allow fabric to soak for 30 minutes.

2. Apply dyes in any number of ways: e.g. brushing, squirting, dripping, pouring, etc.

3. After dyeing, place bundles of fabric directly on a rack in a dye pot, cover the pot, and steam the fabric for 15 minutes; or place the bundle in a cover microwave casserole and microwave for 3 - 7 minutes on high. Be sure the fiber steams for at least 5 minutes, and there is enough moisture to keep the fiber from scorching.

4. With either fixing method, leave the fiber to cool to room temperature or overnight with the cover on.

5. Rinse bundles quickly under cool water. Gently squeeze to remove excess dye. Unfold or unwrap bundles and rinse until water runs clear.

6. Wash with 30 ml. of Orvus Paste to 500 g. of fiber. Rinse.