Booths, Breathing & Brightness

Tools necessary for painting your airplane

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AFTER DECIDING WHAT equipment you need to paint your airplane, deciding where you'll paint it is your next step. Depending on your circumstances, you might have a lot of options, but the easiest way to make this decision is to cross off your list places you do not want to paint: outdoors, especially in fog or high humidity; outside in direct sunlight; in a place with bad lighting; in the wind; in a dusty place; in a place where you can't control the temperatures (generally, you can't paint when the temperature is below 60°F); and in a rented or borrowed paint booth where you can't take your time.

This list also gives direction toward the ideal place to paint your airplane, a clean, well-lighted, temperature-controlled paint shop. You might be able to rent or borrow such a facility in your area, and get the time you need to paint your project right, but realistically, you'll probably be painting in your garage, shop, or hangar. If you have a hangar, bear in mind that some airports do not permit painting unless the space complies with local restrictions such as filtering paint overspray out of the air and collecting the waste, especially if you're using solvent-based paint.

Renting a paint booth in a professional paint shop solves the problems these restrictions can cause, but you'll have to paint in the shop's off hours. And while some shops are agreeable to this, others won't be able to accommodate you. Time is the biggest factor, and if you can't leave your plane to dry for several days, you'll need to move it in and out, as you will when you're ready to shoot the trim colors. All of this moving presents obvious problems.

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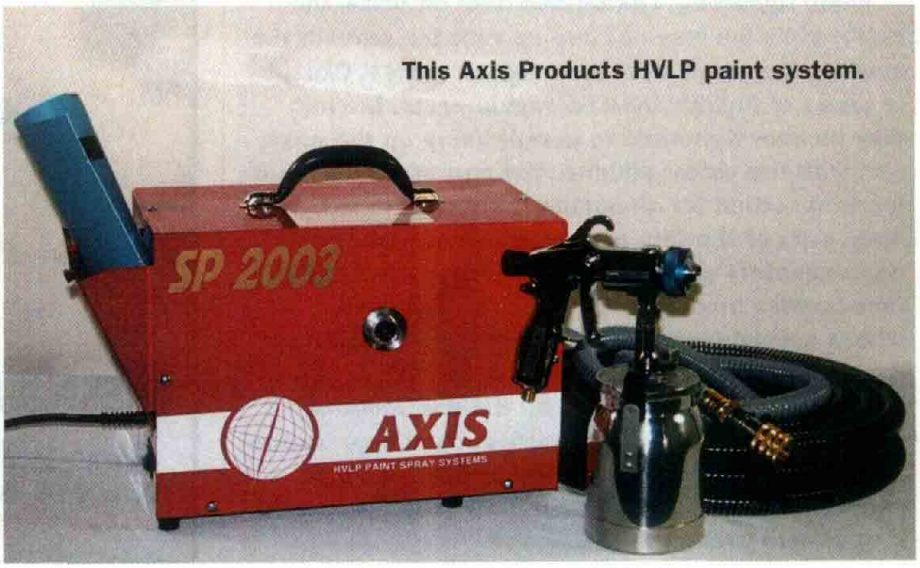
Paint Booths

Let's assume you'll be painting in your shop, just as long as your shop is not in your basement. Paint fumes will spread throughout the house from the basement, and you won't be very popular with the rest of your family. After picking a suitable site, you need to build a paint booth. Using PVC pipe or wood, build a frame that covers you and the largest piece of the airplane you'll be spraying, giving yourself room to walk freely around the part (or whole airplane).

Tape or staple plastic sheeting (4 mil painters' plastic works well) to the sides and top of the frame, and seal the seams with duct tape. To create a flow of filtered air through your paint booth, tape a furnace filter or two at one end and an exhaust fan to the other. Make sure the fan has an enclosed motor that won't spark. An explosion-proof motor is best. If you're unsure about the fan's motor, leave it out and quit spraying when the booth becomes full of overspray. The over-



This Axis Products HVLP paint system.

spray will settle in minutes, and then you can go back to work.

Next you'll want to build something to hold or hang the parts you want to paint. A wood frame covered with chicken wire will do. The wire gives the overspray some place to go, and you can accomplish the same thing by hanging smaller parts from a sturdy support with a piece of welding rod. And don't forget sawhorses. Remember that painting on a horizontal plane is best; you spray one side, let it dry, and then turn the part over to paint the other side. Painting a part on the vertical plane, like when it's suspended from the paint booth's ceiling, is a challenge and often leads to runs and dribbles on the surface.

When building a paint booth in your shop, understand that the overspray will end up on the floor. You can either protect the floor or have it match the colors of your airplane.

Lighting

Good lighting is an important part of a good paint job. You should be able to see the mist from the spray fan form into a liquid film on the part being painted. The only way to see this properly is to look into the glare from reflected light in the wet film. The more glare the better. To achieve maximum reflection, professional paint booths have a series of overhead lights mounted at a 45-degree angle to the floor.

Novice painters often make the mistake of looking directly at the paint and not the glare. When looking at the paint they can't see the thickness of the film that forms, and the color fill often mesmerizes them. Look at the glare reflected in the paint, and if you can't see it, do what the pros do—move around the part until you find the glare.

Or you can move the light that creates the glare. Available at most home centers, halogen lights on

stands are a good source of movable light, and your paint booth should have these lights in abundance. Because halogen lights are quite bright, you can put them outside the booth, so they'll shine through the plastic. This also increases safety because there's no chance the hot halogen bulb will ignite paint molecules in the overspray. The bottom line is this—when you are painting you cannot have too much light.

Safety

Spray painting presents certain health hazards that depend on the type of paint you're using. Inhaling the atomized paint chemicals is the biggest one, regardless of what paint you use. Wear a good respirator. One with a charcoal filter is sufficient for most primers, dopes, and paints.

If you are using *any* type of polyurethane paint, you must use a forced-air breathing system. Polyurethane paints emit polyisocyanides that can be extremely hazardous. Some people have severe reactions to polyurethane, so don't take a chance. A simple forced-air breathing system, such as the one from Axis, is relatively inexpensive, and it's certainly a good investment to protect your health.

You also need to protect your skin. When mixing or applying paint, wear latex gloves or a barrier cream like Invisible Gloves. Rather than ruining a long sleeve shirt and pants, get a Tyvek spraying suit, which is not very expensive and protects your clothes—and your skin. If you spill solvents on yourself, remove your clothes, wash the area with soap and water, and put on fresh clothes. Do not mix paints with an electric drill because the motor could spark and ignite the fumes that result from the stirring action. If conditions are just right, a flash fire can ignite in the paint can.

Always have a fresh air breathing system. A simple forced-air system must be used with any type of polyurethane paint.

Always wear goggles when mixing or spraying, and set up an eyewash station nearby, just in case. You should also have fire extinguishers rated for petroleum fires handy. Under certain atmospheric conditions, sanding or spraying can generate static electricity that could ignite solvent vapors, so ground the structures you're working on, and it's a good idea to wear leather shoes to ground yourself.

Time

How long it will take to paint your airplane depends on the size of your airplane and how complex your paint scheme is. But remember, this is homebuilding, so it will take you longer than you think. Whether you paint your airplane as a whole or paint individual parts for later assembly also affects painting time. Either way will take several days, but always give the paint time to dry properly before

you apply any trim colors or assemble the parts.

Whether you paint the airplane as a whole or in pieces is a personal decision, but it's easier to paint the parts and then assemble them. Painting an assembled airplane can be done, but it's difficult and takes a lot of skill and practice.

Either way, rushing through the process is a sure way to ruin a paint job. How many times have we seen the result of a hurried paint job completed just prior to attending a fly-in? If you feel yourself rushing, ask yourself a simple question: If you don't have time to do it right, do you have time to do it over again?

When to Paint

Practically speaking, many builders assemble their airplane, test-fly it, and then paint it. If you paint your airplane as a whole (opposed to painting the parts), you should follow a definite sequence. First, paint the ends and leading edges of surfaces, then paint the bottom of the airplane, starting at the tail and working forward.

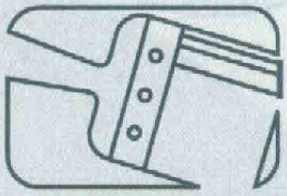
Spray from the tail control surfaces all the way up the fuselage to the engine and then spray the underneath side of the wings. It's easier if you can persuade another painter to help you. That person can paint at the same time you are painting, with one of you staying slightly ahead of the other. Often it is impossible for one person to reach entirely across a wing. The trick of the entire process is to keep the surface wet all the time.

After spraying the bottom of the airplane, paint the vertical stabilizer, the top of the tail surfaces, the top of the fuselage, and then the top of the wings. It is more difficult to paint the airplane when it is assembled, and overspray is the problem. You must keep overspray off the surfaces you've already painted. To get an idea of the job ahead and to pick up on some of the techniques, visit a local paint

Working with a charcoal filtered respirator guards against health hazards from most primers, dopes and paints.

shop and watch its painters work. There are a number of ways to do this, and each painter has a trick or technique. *When you paint the airplane unassembled, the problems are minimized.*

Next month we'll look at preparing the surfaces you'll paint, finding what types of paint are available, and actually applying the paint.



Painting Supplies

In addition to a well-lighted paint booth and the necessary safety equipment, such as a respirator, goggles, and protective clothing, you'll need the following painting supplies before you start spraying your airplane:

- **Dropcloths to protect the floor**
- **Plastic sheet**
- **Coffee cans**
- **Tack cloths**
- **Paint filters**
- **Stirring sticks**
- **Masking tape**
- **Fine-line masking tape**
- **Butcher paper or masking paper**
- **Clean rags**
- **Wet/dry sandpaper**
- **Sanding blocks**
- **Scotch-Brite pads**
- **Orbital sander (optional)**
- **Single-edge razor blades**
- **Plastic squeegee**
- **Soup ladle for dipping paint**
- **Scissors**
- **Viscosity cup**
- **Handheld agitator to use with pneumatic drill.**