

# **Avian-D Coating**

**Instruction and Information Packet  
Preparation and Application Notes:**



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Avian D Coating  
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Avian-D is a two-part water-based urethane coating, consisting of a water phase with pigment and an activator. The coating, which can be applied to a wide variety of substrates, is water resistant and quite durable.

The Reflectance of Avian-D coating matches that of barium sulfate-based coating in the visible region of the spectrum and is also quite useable into the near-UV and in the very near-IR.

Avian-D coating is ideal for field applications, such as calibration plates and remote sensing targets, where the coating will experience variations in temperature and humidity. The coating is also ideal for large integrating spheres used in lamp measurement photometry where large amounts of UV are not present. The coating is stable over the range -40° C to about 85° C.

### **Preparation and Application Notes for Avian-D Coating**

This coating system represents the latest in water-based technology and the best in a highly reflective exterior two-component urethane system. The material yields a very high reflective surface that is weatherable, water-resistant, and re-coat able. Avian-D retains all the physical and chemical properties the protective coating industry demands from conventional solvent systems.

There are several advantages to using this finishing system over conventional solvent borne systems. The coating is thinned with and cleans up with water. It has significantly lower VOC's than conventional and high solids systems. This system exhibits longer pot life (42-72 hours after mixing) and lower application viscosities than virtually all high solids urethane coatings. In addition, this water-based system is considerably more durable and chemically resistant than standard one component air-dry water-based materials.

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**USE ONLY GLASS OR STAINLESS-STEEL VESSELS FOR MIXING. DO NOT USE ALUMINUM VESSELS FOR MIXING – THEY WILL DEGRADE THE PERFORMANCE OF THE COATING.**

### **Parts Preparation**

Clean all parts to be coated of dust, dirt, oils, etc.... Use soap and water; alcohol can be used to remove grease; sanding- or bead-blasting is used to remove anodizing from sections that are to be coated. Dry the parts thoroughly before continuing.

- Mask off areas that are not to be coated using masking tape for small areas, and masking paper taped in place for large areas.
- If one has many small parts, it may be helpful to mount multiple parts on a sheet of corrugated cardboard using double-stick tape.

### **Avian-D Coating Preparation/Materials**

After preparation of the material to be coated, gather the following materials for the coating process. The appendix to this document gives recommendations for specific brands based on Avian Technologies coating experiences.

- Avian-D coating kit (Components A and B)
- Distilled water
- Mixing device, stirrer based - not a blender – no aluminum parts in contact with coating
- Apparatus for measuring volume (syringes, graduated cylinders) It is suggested that graduated syringes be used to measure component quantities – a 140cc syringe works well for measuring Component A; a 6 or 12 cc syringe works well for measuring Component B. If using a luer-lock type syringe, using a plastic infusion cannula keeps the syringe out of the coating and makes clean-up easier.
- Viscosity Cup

### **Avian-D Coating Preparation/Procedure**

- The ratio of components, by volume, is: 33 parts Component A: 1-part Component B

- Distilled water is usually added at a rate of 5-10 percent of the total coating volume but will vary depending on environmental factors.
- A graduated cylinder, plastic or glass, will work well for adding the distilled water.
- Determine quantity of coating needed – make only what will be consumed/sprayed that day. Although mixed quantities can be used 48-72 hours after mixing, it is still recommended that only the amount expected to be used in one day be prepared.
- Divide the total quantity desired by 33 to determine the amount of Component B required.
- Subtract quantity of Component B from total quantity desired to determine the amount of Component A required.
- Mix Part A thoroughly prior to combining with Part B. Then combine components in a stirrer-based mixer (not a blender) with a glass, stainless steel bowl or plastic container.
- Mix at relatively slow speed and add distilled water to adjust viscosity.
- Continue to mix and add distilled water until coating runs through a Wagner viscosity cup in  $19 \pm 1$  seconds.
- Allow all components to mix for at least 5 minutes once desired viscosity readings are achieved.
- Transfer mixed coating to spray gun cup, stainless steel pressure pot, or polypropylene bottle for temporary storage.

### **Avian-D Application/Spraying Materials**

- High-volume / low-pressure (HVLP) spray gun
- Air compressor capable of delivering 35 PSI to the spray gun
- Air hose
- Line filter (to remove moisture and oils from compressed air)

**Note: Any metals that come into contact with coating (e.g., pressure pot and stirrer) must be stainless steel.**

### **Spray Techniques**

- Place or hold parts approximately 12-18 inches (30-45 centimeters) from spray gun.

- Start spraying before gun is aimed at part; continue spraying after gun passes the end of the part.
- Spray in a steady and even pattern.

The above techniques will ensure that coating at the edges of parts is equivalent in thickness and appearance to the coating at the center of the part. Between coats, allow parts to dry under low heat (approximately 250-watt heat or halogen lamps) for  $\leq 5$  minutes. Heat source should be at least 18 inches (45 cm) away from the coated surface. Continue the cycle of spraying and drying until the coating is approximately 20 mils (0.5 mm) thick – this is roughly 16-20 coats. When proper thickness is achieved, allow the coated parts to sit at room temperature for 24-48 Hours, the use of heat lamps or drying oven will reduce drying time.

### **Coating Clean-Up**

Clean all equipment with soap and hot water before coating dries.

### **De-masking**

Remove tape carefully to avoid chipping edges of coating. If coating does chip, it may be touched up using leftover coating  $\leq 24$  hours old and a small paintbrush.

### Appendix Materials and Sources

Sources are identified as those suppliers that have worked well for Avian Technologies LLC. – they are provided to give a clearer idea of what equipment we use; they may not be available internationally. Other suppliers and equipment may work equally well.

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| <p style="text-align: center;"><b>Liquid Mask</b></p>                                | <p style="text-align: center;"><b>BIN Primer</b></p>              | <p style="text-align: center;"><b>Luer Lock Syringes</b></p>    |
| <p style="text-align: center;"><b>Infusion cannulas</b></p>                        | <p style="text-align: center;"><b>Wagner Viscosity Cup</b></p>  | <p style="text-align: center;"><b>Zahn Viscosity cup</b></p>  |
| <p style="text-align: center;"><b>Spraying equipment<br/>(HVLV) Spray Gun</b></p>  | <p style="text-align: center;"><b>Airbrush</b></p>              | <p style="text-align: center;"><b>Line Filter</b></p>         |

