

Chapter One

extremes, pressurization stresses, and in-flight hail encounters. In fact, they are manufactured to be able to handle bird strikes as high as 360 knots!

There is actually a test to determine bird strike compliance. A frozen chicken of a specified weight is loaded into a specially designed cannon and shot at the windshield to simulate the bird strike. I know that sounds like a joke, but that's actually how the test is conducted. I think the inventor of the process was awarded a Pullet Surprise for his pioneering efforts.

Laminated acrylic is a layer of vinyl sandwiched between two layers, or plies, of stretched acrylic. The vinyl commonly contains a heating element of fine mesh wire used for windshield deicing, which has unfortunately been proven to cause a few problems. While it is great for windshield deicing, it turns out that acrylic is sensitive to high temperatures. Some aircraft transparencies have crazed and even cracked as a result of excessive heat from the deicing system. So, on some large twins, the captain's side of the windshield is made of glass, which, because it is less sensitive to temperature, is equipped with an electric deicing system. The copilot's side is made of a less expensive, unheated acrylic transparency.

Most single-engine and light twin-engine aircraft use as-cast acrylic resin transparencies. They actually transmit light better than glass—about 90% of the available visible light through untinted windows. Of course, there are still the poor hardness qualities to contend with, making them very susceptible to scratches, distracting reflections, and severe glare problems.

Care of Acrylic Transparencies

Proper care of transparencies is essential to prevent problems, ensure a long life, and reduce potential glare problems. First, never clean a window with a coarse cloth or paper towel. You really have to keep your eye on those "efficient" flight line attendants. They also seem to particularly enjoy carrying around a bottle of chemical cleaner that will react with and damage acrylic. In the long run, you are always better off cleaning your own windshield to be sure the job is done properly.

To clean glass transparencies, you should first remove excessive dirt with clean, flowing water. Then clean the transparency with a solution of mild detergent, such as Joy or Ivory Liquid, and water—or, if you prefer, with a 50% solution of isopropanol and water; either will do a good job. After applying the solution with a soft, clean cloth, rinse the area thoroughly and then dry it. The use of window cleaners, such as Glass Wax or Windex, is not recommended because even though they clean well, they contain wax which can cause streaking.

The proper method for cleaning acrylic transparencies begins with your removing your rings, watches, and other jewelry, which can cause deep scars in the surface. Next, remove excess dirt from the transparency with a flow of clean water. You can locate and remove caked dirt with your hand and fingers while flooding the area with water. Thoroughly clean the crevices around the window framework; dirt hidden there may be dragged out later and scratch the surface.